

Trainer's Guide

Module 6.3

Complex communication means



Presenter's name: _____

Date: _____

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More specifically, the French Institut National de la Recherche Médicale (Inserm, 2007) describes the language skills that are essential for reading and their interaction as follows: .	4
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Learning objectives

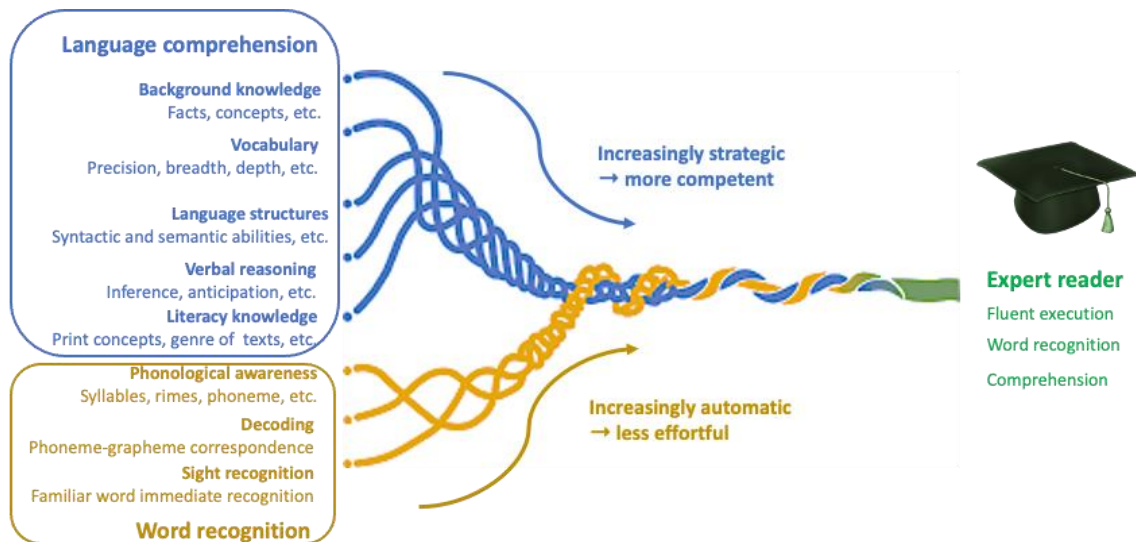
At the end of this section, you will understand:

- The mechanism of reading and its cognitive requirement
- The impact of IDD on learning abilities

1.Content

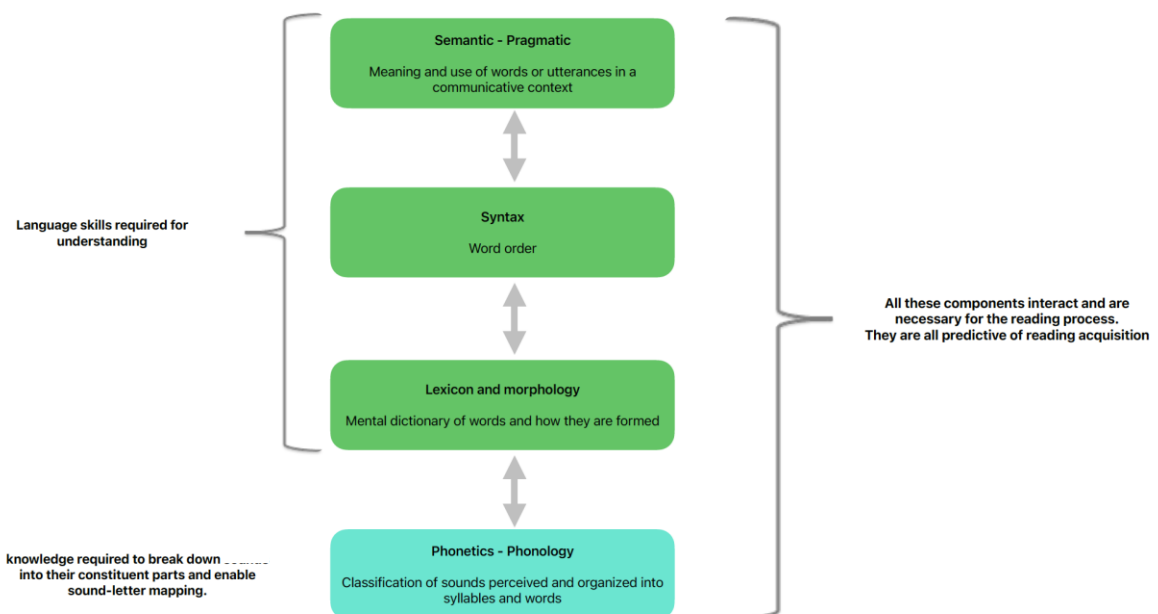
What is reading and which skills are necessary to read?

Reading is a set of perceptual, linguistics and cognitive processing allowing written information to be treated (Brin-Henry et al., 2018). Usually, reading is considered as the product of two main abilities: word recognition and language comprehension (Gough & Tunmer, 1986). In other words, to read you need (1) to master the rules for accurately matching letters and sounds and (2) to master a set of general language abilities (lexical knowledge, syntactic structure, etc.) necessary to understand what you are reading. Scarborough (2001) represent this process as two intertwined ropes: one rope representing the word recognition process and the other one the language skills. For the beginning reader, the two ropes are tied together quite loosely; the skills they represent are still to be acquired. The more expert the learner becomes in reading process, the more the ropes tighten into one.



As many people with IDD reach adulthood without having acquired the basic skills of reading, it is interesting to focus on abilities necessary to succeed in reading and writing learning.

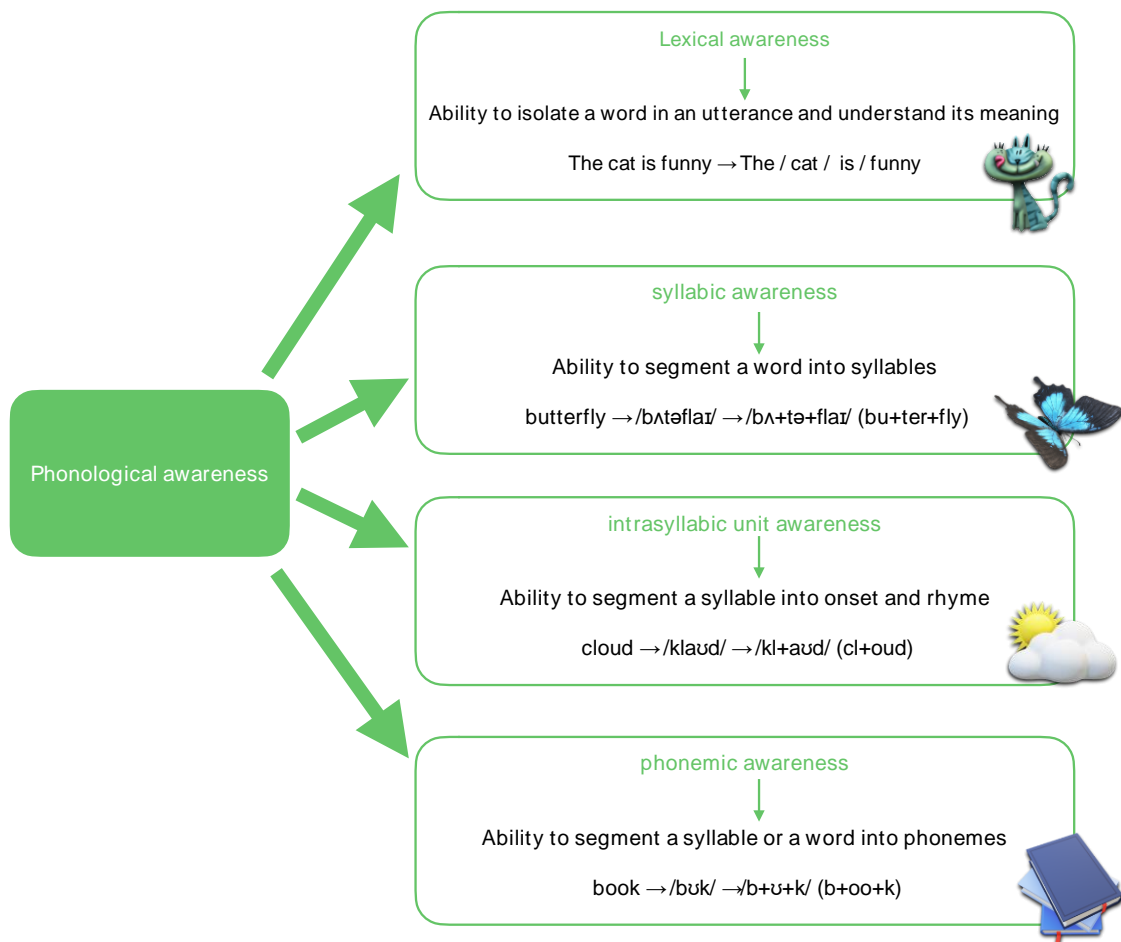
More specifically, the French Institut National de la Recherche Médicale (Inserm, 2007) describes the language skills that are essential for reading and their interaction as follows:



Specific predictors of written language acquisition

1. **Phonological awareness**: the ability to voluntarily identify and manipulate the sound units in a word (syllable, rime, and phonemes). This ability to rely on oral distinctive units to written units is highly predictive of reading acquisition. In typical children, phonological

awareness and reading develop in interaction. Phonological awareness is not spontaneous but must be the subject of an active training procedure.



1. **Verbal short-term memory**: especially the ability to retain phonological information. It is a limited memory capacity system responsible for the temporary retention of verbal information (the time required for its processing). Attention and verbal short-term memory are essential for processing and decoding verbal elements. The acquisition of these functions is thought to be delayed in subjects with disabilities and strongly related to the degree of IDD (Jolicoeur & Julien-Gauthier, 2019). Moreover, Cèbe and Paour (2012, p.43) add that "an increase in the degree of IDD is accompanied by an increasing limitation of processing capacities (particularly verbal, visual, memory, attentional, etc.) and a premature halt in development".
2. **Access to representations or rapid automatized naming (RAN)**: rapid access to information stocked in long-term memory. Rapid automatized naming is a good

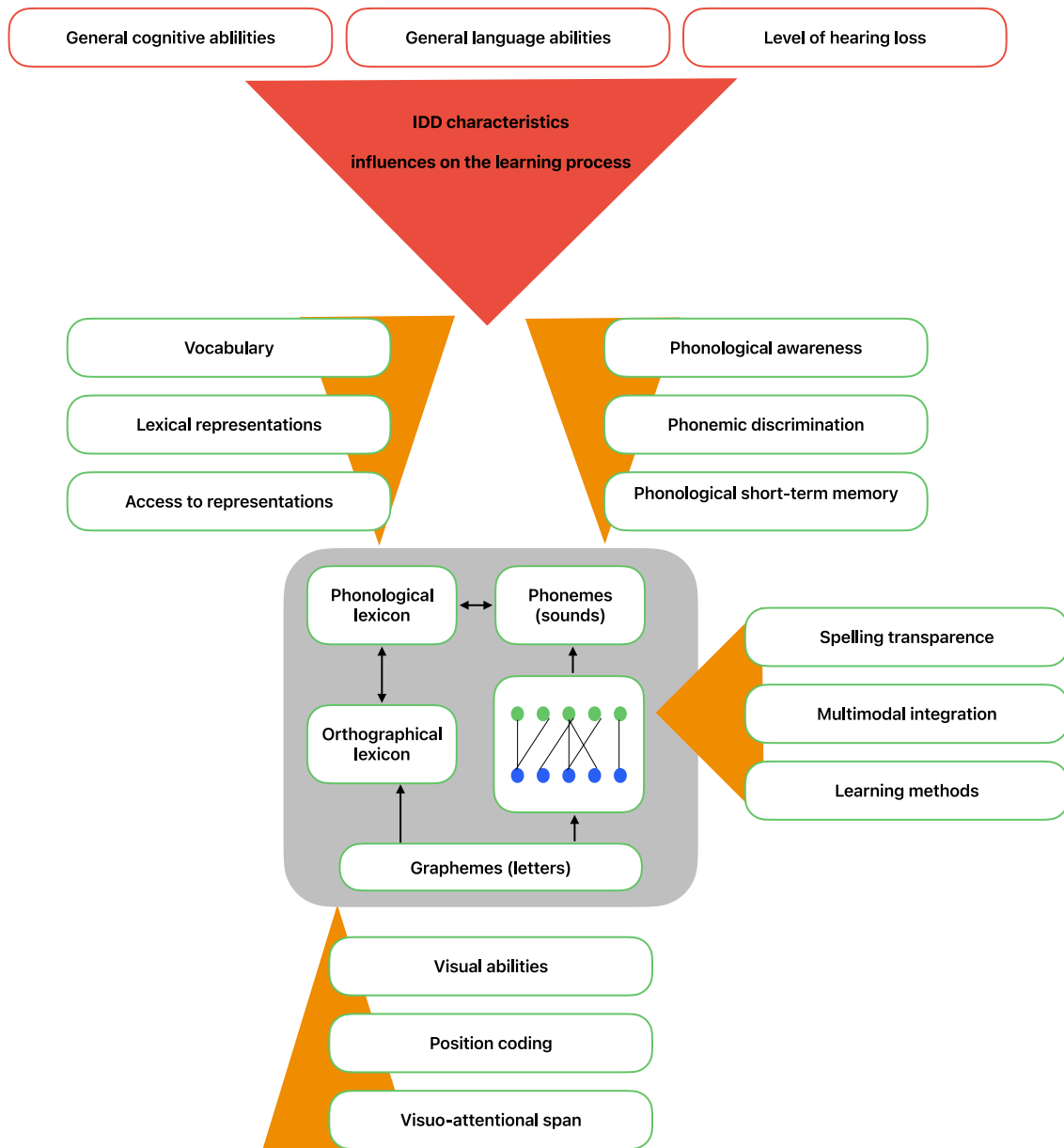
predictor of reading acquisition. It involves: (1) visual processing of the stimulus, (2) access to the phonological code of the corresponding word, articulation of the word, (3) its inhibition and (4) transition to the next stimulus.

All these predictors are deficient in people with IDD. The work that will lead them to reading is long and difficult and, if many will not achieve it, that does not mean that none of them will succeed.

Reading with and IDD?

Predictor of reading development: what can we expect in IDD?

The following figure (adapted from Ziegler, 2018) shows the multiple components involved in the reading process (the orange arrow). Ziegler (2018) presents this diagram as part of the description of dyslexia. Even if we know that one of the exclusion criteria of dyslexia diagnosis is the presence in the child of an intellectual deficiency, we can nevertheless consider that the deficits are, at least partially, of the same nature. So, we added to the figure the general characteristics of the IDD situation (red arrow). These characteristics negatively influence the reading process.



In the diagram above, several factors influencing the general reading process in neuro-typical children are represented. They are of different kind:

1. **Factors specific to the person themselves:** level of functioning and information processing (e.g. phonological awareness, phonetic discrimination, vocabulary, visuo-attentional abilities, etc.).
2. **Factors relating to the language itself** and more particularly to the level of transparency/opacity of its spelling. In other words, do we observe a perfect letter-sound

correspondence or are there irregularities? (e.g. in French the sound /o/ can be written -eau like in 'oiseau' -bird-, -oo like in 'zoo', -aux like in 'chevaux' -horses-, -o like in 'rose').

3. **Factors relating more specifically to reading teaching methodology:** teaching methods are mainly of two types: (1) the global method focused on the learning of the global word form which is gradually decomposed into letter-sound correspondence and (2) the synthetic method focused on the letter-sound correspondence which are gradually assembled to arrive to the word. It happens that in this second type of method, gestures are associated with the sounds of the letters to facilitate memorization.

In addition, the general characteristics of the intellectual disability itself have a negative influence on the learning process. These include:

1. **General cognitive abilities** (executive functions such as attention, inhibition and planification skills, level of abstraction, etc.) which can be considered as a determinant of learning effectiveness.
2. **The level of hearing loss:** having no (or a minimal) hearing loss is important to ensure good discrimination of sounds which is essential for reading (as written language represents the transcription of an oral production into written one).
3. **Expressive and receptive language abilities:** a clear correlation exist between oral language competencies and reading/writing (e.g., Scarborough & Dobrich, 1994). In IDD persons, language skills (particularly vocabulary and grammar) are much less developed than in typical child.

In a survey carried in 2009, Al Otaiba et al. reported that parents of Down's syndrome children consider learning to read to be a priority for their child. Furthermore, in 2011, Hartley et al.'s survey shows that 95% of adult males with FXS and poor reading skills do not live independently whereas 90% of those who have developed reading skills can live independently and autonomously in daily life. Reading skills therefore influence people's quality of life and their social participation, which is why it is essential that they develop them. Unfortunately, it is usual to assume that people with moderate IDD cannot learn to read or that their reading skills remain limited to recognizing a few familiar words. As a result of this preconceived idea, research in this area in IDD people remains rather minimal compared with that devoted to language and communication development, or to social, emotional, sensory,

and motor development. Nevertheless, inter-individual variability is significant, and we certainly cannot *a priori* certify or predict that a person will or will not be able to reach an independent reading level because of his IDD.

Beginner readers need to be guided by an expert reader to develop their reading skills. This learning must therefore be explicit and systematic to enable the child to acquire the alphabetic principle. The first studies carried out on disabled individuals focused more on training global word recognition based on visual representation rather than on phonic training. Unfortunately, learning by visual recognition of single words limits the reader to logographic recognition of written words, in other words to global identification of familiar words by visual memorization. This method considerably reduces the number of recognizable words and does not allow the development of an expanded mental lexicon or the acquisition of alphabetic and orthographic principles (Comblain & Vanuxem, 2023; Sermier Dessemontet & Martinet, 2016; Vanuxem & Comblain, 2023). It does not therefore appear to be the most effective long-term treatment, especially if we consider the memory limitations of people with IDD. Recent clinical and applied research is increasingly recommending the use of phonic learning for people with IDD, with the emphasis on multisensory learning. In addition, linking phonic learning with intensive vocabulary stimulation also seems to be a successful strategy with people with IDD.

Thus, recent research shows that, with appropriate support, learning to read is possible in a certain number of people with IDD. Today, there is evidence that they can develop reading skills, despite their learning difficulties (Adlof & Hogan, 2018; Dessemontet et al., 2022). Indeed, individuals with moderate to severe IDD can develop the essential prerequisites for reading, such as phonological awareness and grapheme-phoneme correspondences (Cèbe & Paour, 2012; Sermier Dessemontet & Martinet, 2016). However, this acquisition takes place more slowly than in the neuro-typical child and requires more effective strategies adapted to their cognitive difficulties, as well as explicit, intensive, and long-term training (Allor et al., 2014; Martinet et al., 2022; Sermier Dessemontet & Martinet, 2016). Indeed, targeted teaching is required, and the learning period can vary from six months to three years for an individual with moderate to severe IDD to enable them to decode simple utterances (Cèbe & Paour, 2012; Sermier Dessemontet & Martinet, 2016). Thus, the effective methods developed to teach reading to typical children (or those with specific learning difficulties such as dyslexia)

are also relevant to helping those with mild to severe IDD (Sermier Dessemontet & Martinet, 2016). Despite this adapted teaching, IDD learners generally do not reach the same level of reading skills as typical children. As we already mentioned, the delay can be explained by their specific cognitive (Jolicoeur & Julien-Gauthier, 2019). The low intellectual level of these people influences the development of skills necessary for literacy development, such as auditory and visual discrimination, as well as attention and memory. In addition, the affective and emotional difficulties of individuals with IDD, such as reduced motivation and self-esteem, difficulty investing in the tasks required and fear of failure, also have an impact on learning to read (Jolicoeur & Julien-Gauthier, 2019).

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2.Materials Needed

The slides for this presentation (COM-IN_PR3_6_3_Written language_EN.pptx)


A Video projector

3.Slides and Content

Slide n°2



Module 6.3 Written language



Learning Objectives

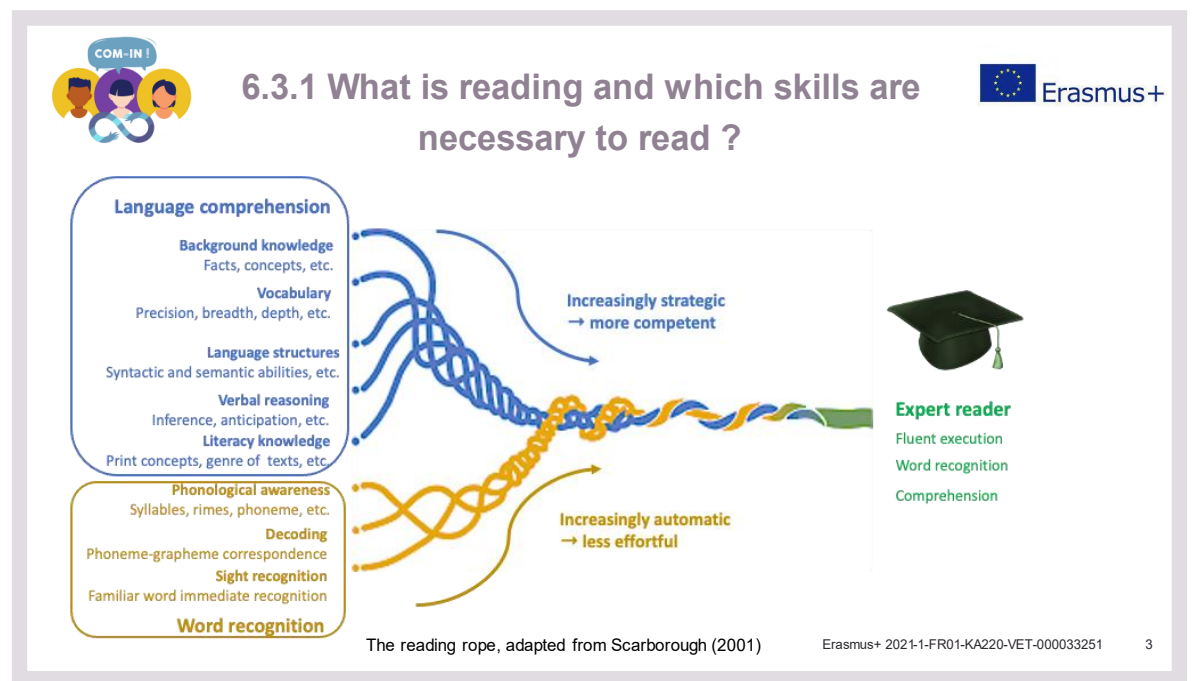
- Understand the mechanism of reading.
- What are the cognitive requirement of reading ?
- What are the impact of IDD on reading abilities ?

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Content :

Notes :

Slide n°3



Content :

Reading is a set of perceptual, linguistic and cognitive processing allowing written information to be treated.

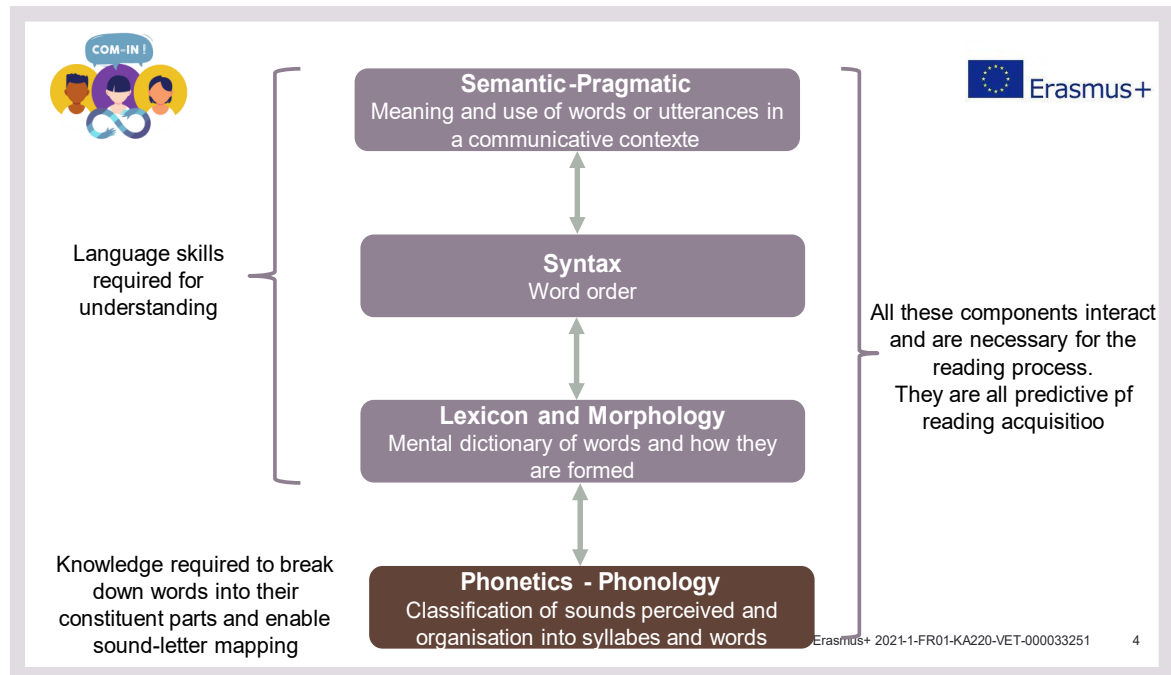
Usually, reading is considered as the product of two main abilities: word recognition and language comprehension. In other words, to read you need (1) to master the rules for accurately matching letters and sounds and (2) to master a set of general language abilities (lexical knowledge, syntactic structure, etc.) necessary to understand what you are reading.

Scarborough (2001) represent this process as two intertwined ropes: one rope representing the word recognition process (in yellow) and the other one the language skills (in blue).

For the beginning reader, the two ropes are tied together quite loosely; the skills they represent are still to be acquired. The more expert the learner becomes in reading process, the more the ropes tighten into one.

Notes :

Slide n°4



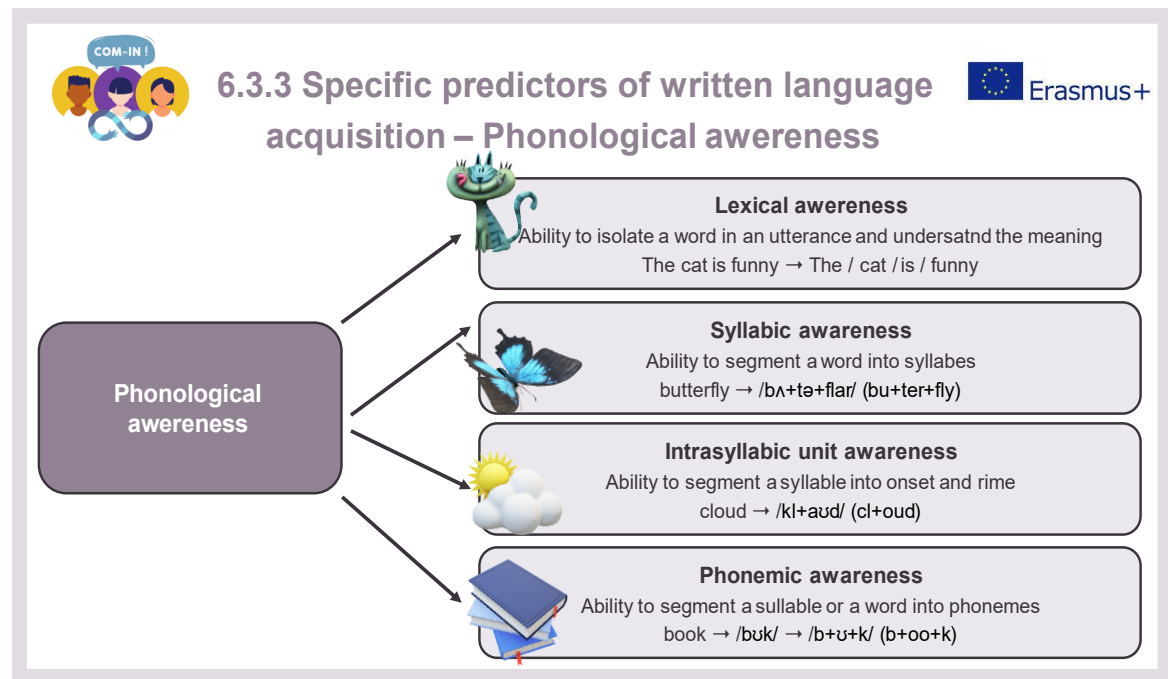
Content :

As many people with IDD reach adulthood without having acquired the basic skills of reading, it is interesting to focus on abilities necessary to succeed in reading and writing learning.

More specifically, the French Institut National de la Recherche Médicale (Inserm, 2007) describes the language skills that are essential for reading and their interaction (in the figure on this slide)

Notes :

Slide n°5



Content :

Phonological awareness: the ability to voluntarily identify and manipulate the sound units in a word (syllable, rime, and phonemes).

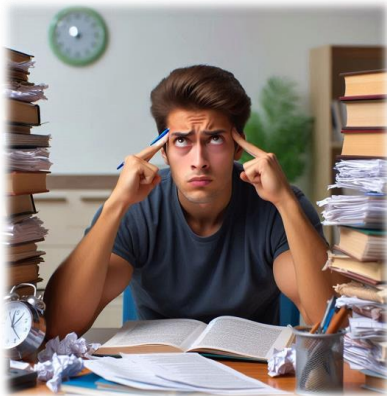
This ability to rely on oral distinctive units to written units is highly predictive of reading acquisition. In typical children, phonological awareness and reading develop in interaction. Phonological awareness is not spontaneous but must be the subject of an active training procedure.

Notes :

Slide n°6



6.3.3 Specific predictors of written language acquisition – Verbal short-term memory



The ability to retain verbal information for a short period of time → the time necessary to process it

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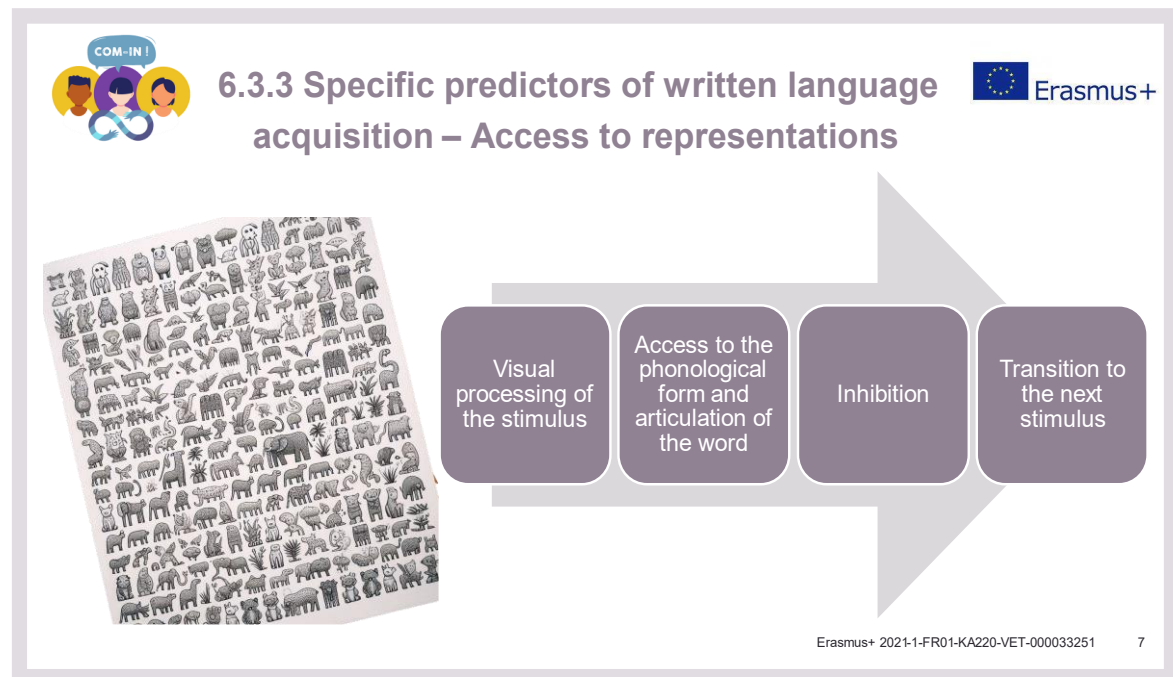
Verbal short-term memory: especially the ability to retain phonological information. It is a limited memory capacity system responsible for the temporary retention of verbal information (the time required for its processing). Attention and verbal short-term memory are essential for processing and decoding verbal elements.

The acquisition of these functions is thought to be delayed in subjects with disabilities and strongly related to the degree of IDD.

An increase in the degree of IDD is accompanied by an increasing limitation of processing capacities (particularly verbal, visual, memory, attentional, etc.) and a premature halt in development

Notes :

Slide n°7



Content :

Access to representations or rapid automatized naming (RAN): rapid access to information stocked in long-term memory. Rapid automatized naming is a good predictor of reading acquisition. It involves: (1) visual processing of the stimulus, (2) access to the phonological code of the corresponding word, articulation of the word, (3) its inhibition and (4) transition to the next stimulus.

Notes :

Slide n°8



6.3.4 Reading with an IDD



Predictors of reading development

What can we expect in IDD

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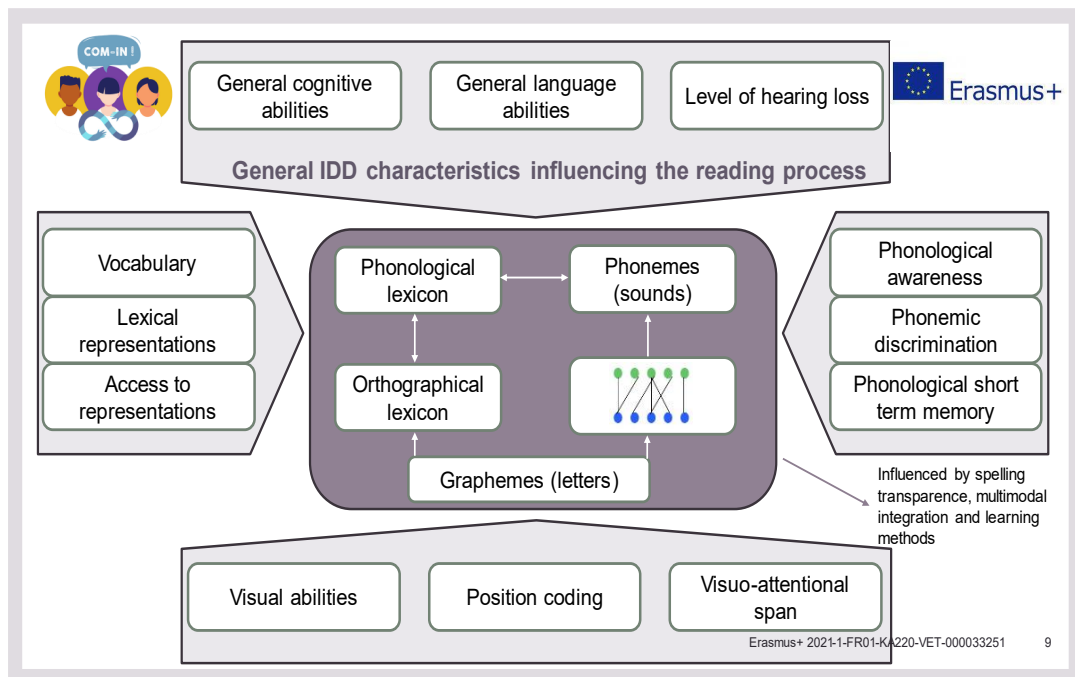
8

Content :

All the predictors described are deficient in people with IDD. The work that will lead them to reading is long and difficult and, if many will not achieve it, that does not mean that none of them will succeed.

Notes :

Slide n°9



Content :

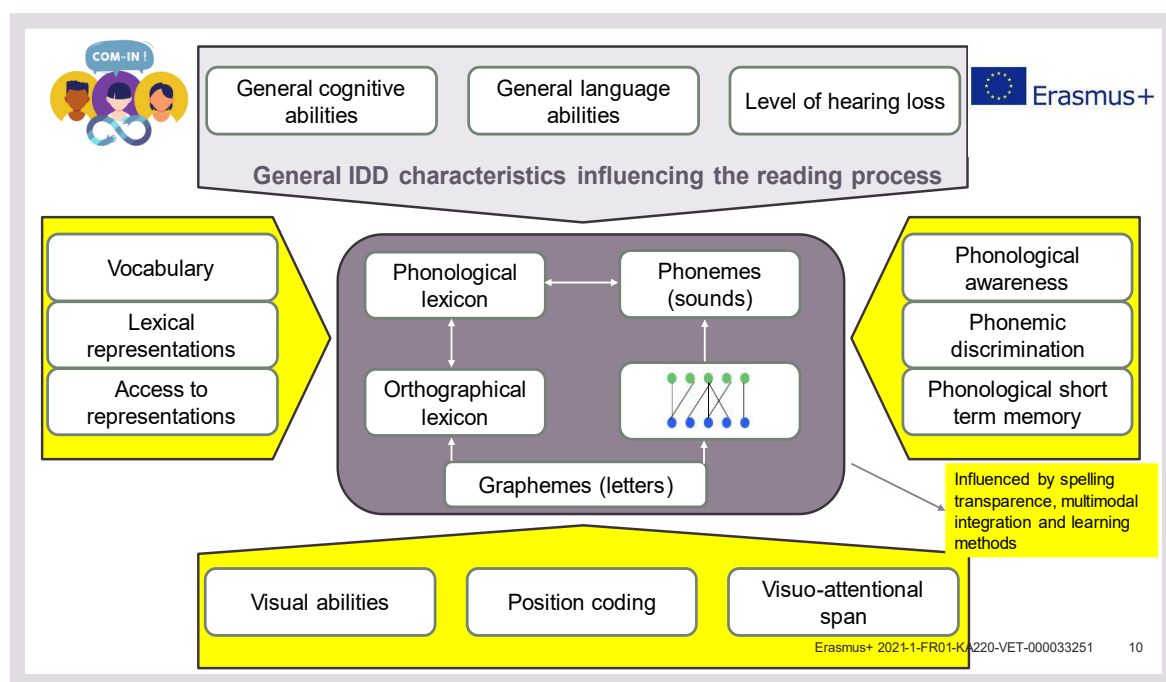
The figure above (adapted from Ziegler, 2018) shows the multiple components involved in the reading process (the orange arrow).

Ziegler (2018) presents this diagram as part of the description of dyslexia. Even if we know that one of the exclusion criteria of dyslexia diagnosis is the presence in the child of an intellectual deficiency, we can nevertheless consider that the deficits are, at least partially, of the same nature.

So, we added to the figure the general characteristics of the IDD situation (red arrow). These characteristics negatively influence the reading process.

Notes :

Slide n°10



Content :

In the diagram above, several factors influencing the general reading process in neuro-typical children are represented.

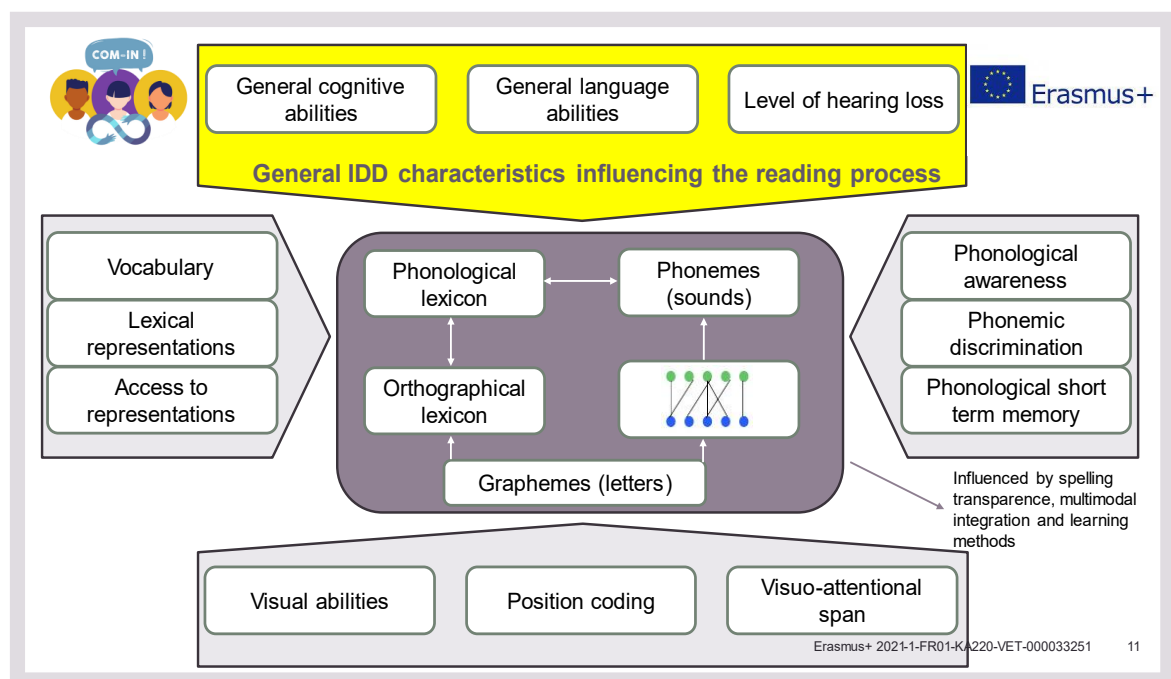
They are of different kind:

1. Factors specific to the person themselves: level of functioning and information processing (e.g. phonological awareness, phonetic discrimination, vocabulary, visuo-attentional abilities, etc.).
2. Factors relating to the language itself and more particularly to the level of transparency/opacity of its spelling. In other words, do we observe a perfect letter-sound correspondence or are there irregularities? (e.g. in French the sound /o/ can be written -eau like in 'oiseau' -bird-, -oo like in 'zoo', -aux like in 'chevaux' -horses-, -o like in 'rose').
3. Factors relating more specifically to reading teaching methodology: teaching methods are mainly of two types: (1) the global method focused on the learning of the global word form which is gradually

decomposed into letter-sound correspondence and (2) the synthetic method focused on the letter-sound correspondence which are gradually assembled to arrive to the word. It happens that in this second type of method, gestures are associated with the sounds of the letters to facilitate memorization.

Notes :

Slide n°11



Content :

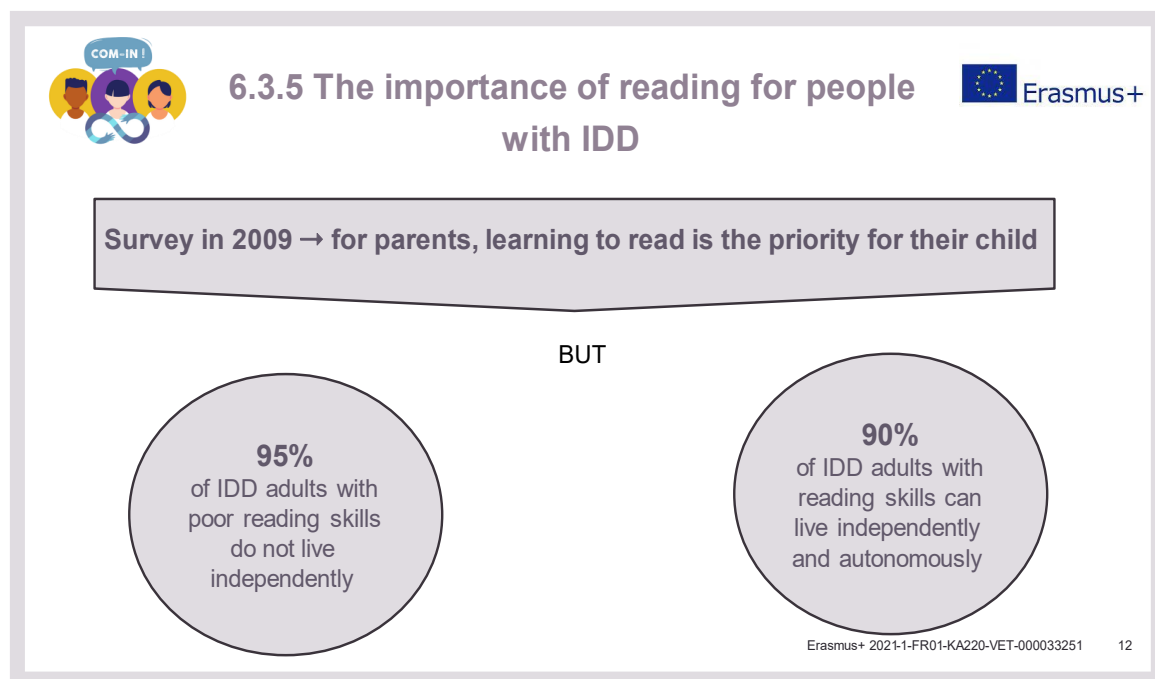
In addition, the general characteristics of the intellectual disability itself have a negative influence on the learning process. These include:

- General cognitive abilities (executive functions such as attention, inhibition and planification skills, level of abstraction, etc.) which can be considered as a determinant of learning effectiveness.

- The level of hearing loss: having no (or a minimal) hearing loss is important to ensure good discrimination of sounds which is essential for reading (as written language represents the transcription of an oral production into written one).
- Expressive and receptive language abilities: a clear correlation exist between oral language competencies and reading/writing. In IDD persons, language skills (particularly vocabulary and grammar) are much less developed than in typical child.

Notes :

Slide n°12



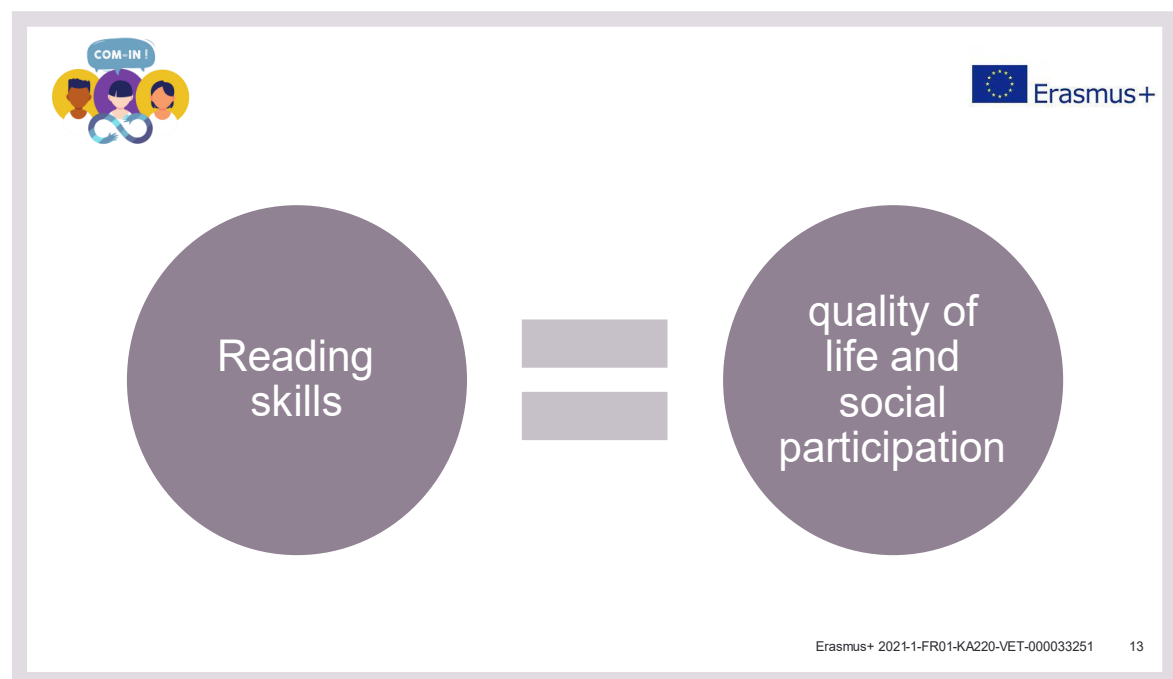
Content :

In a survey carried in 2009, Al Otaiba et al. reported that parents of Down's syndrome children consider learning to read to be a priority for their child.

Furthermore, in 2011, Hartley et al.'s survey shows that 95% of adult males with FXS and poor reading skills do not live independently whereas 90% of those who have developed reading skills can live independently and autonomously in daily life.

Notes :

Slide n°13

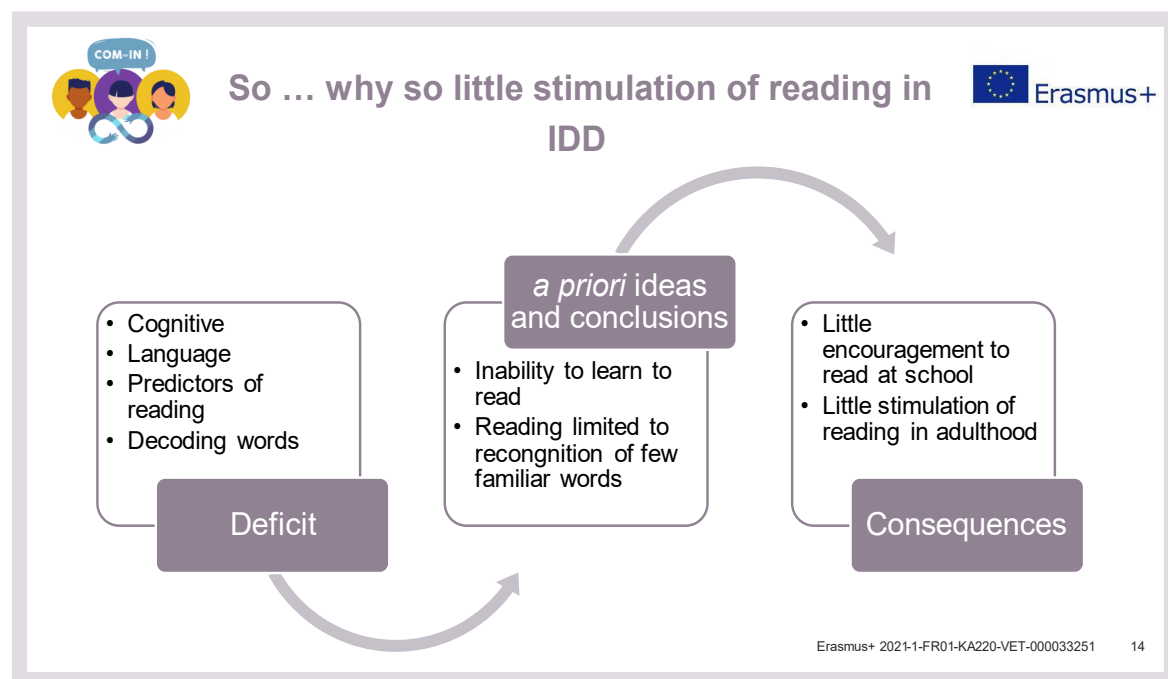


Content :

Reading skills therefore influence people's quality of life and their social participation, which is why it is essential that they develop them. Unfortunately, it is usual to assume that people with moderate IDD cannot learn to read or that their reading skills remain limited to recognizing a few familiar words.

Notes :

Slide n°14

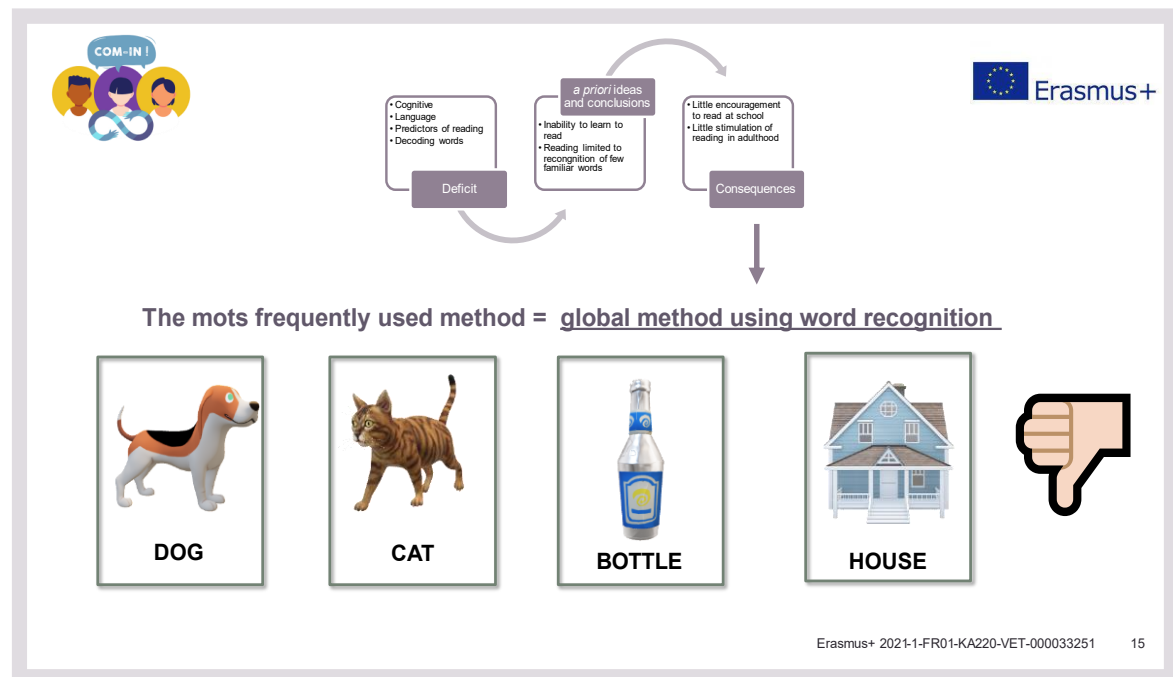


Content :

As a result of this preconceived idea, research in this area in IDD people remains rather minimal compared with that devoted to language and communication development, or to social, emotional, sensory, and motor development. Nevertheless, inter-individual variability is significant, and we certainly cannot *a priori* certify or predict that a person will or will not be able to reach an independent reading level because of his IDD.

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Slide n°15

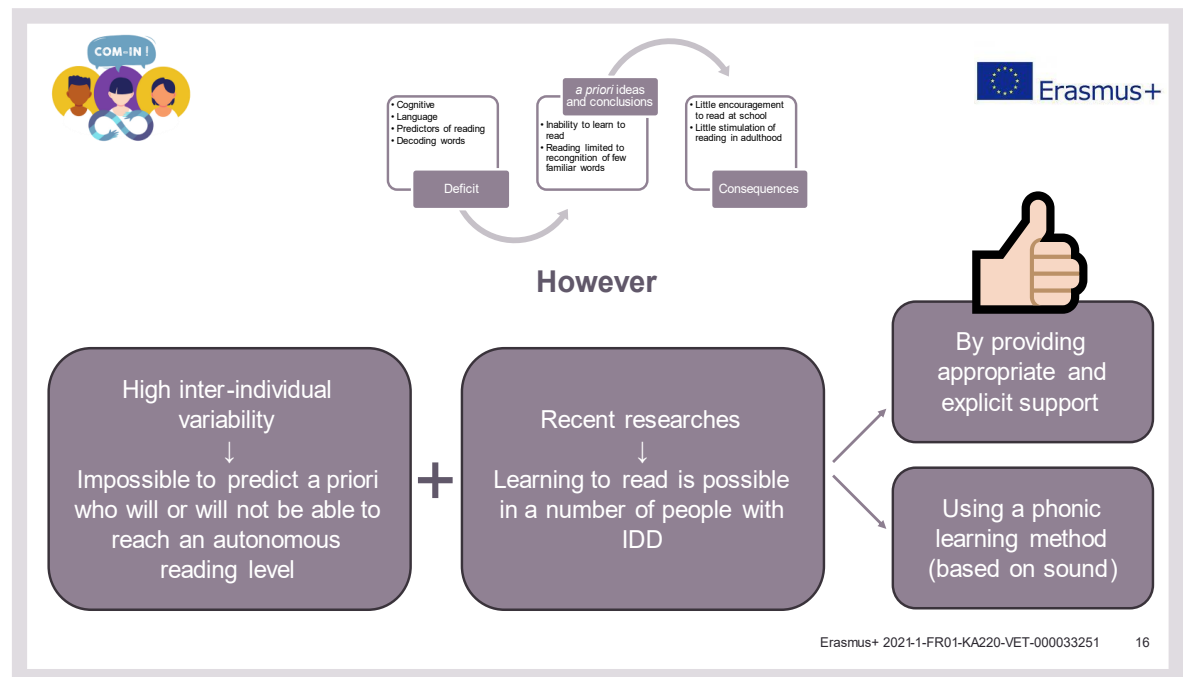


Content :

The first studies carried out on disabled individuals focused more on training global word recognition based on visual representation rather than on phonic training. Unfortunately, learning by visual recognition of single words limits the reader to logographic recognition of written words, in other words to global identification of familiar words by visual memorization.

Notes :

Slide n°16



Content :

Thus, recent research shows that, with appropriate support, learning to read is possible in a certain number of people with IDD.

Today, there is evidence that they can develop reading skills, despite their learning difficulties

Notes :

Slide n°17



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Content :

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Slide n°18



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Content :

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